

U.S.S.N. 10/043,860

Claim Amendments

Please amend claims 1, 5, 9, 13, 15 as follows.

Please cancel claims 3, 4, and 16 as follows.

1. (currently amended) A method for pre-etching a semiconductor wafer comprising tungsten oxide prior to a chemical mechanical polishing (CMP) process to achieve a uniform tungsten polishing rate comprising the steps of:

providing a wafer process surface having a layer of tungsten oxide overlying tungsten to be chemically mechanically polished;

removing the layer of tungsten oxide according to an etching process selected from the group consisting of dry etching with a fluorocarbon etching chemistry and wet etching with a aqueous basic solution comprising agitating the wafer process surface by a method selected from the group consisting of applying megasonic energy and brushing;

cleaning the semiconductor wafer to include the wafer process surface according to a wet cleaning process; and,

chemically mechanically polishing the wafer process surface according to a CMP process comprising applying at least an abrasive slurry to the wafer process surface.

2. - 4. (cancelled)

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5. (currently amended) The method of claim 1, wherein the aqueous basic solution has a pH of greater than about 10.

6. (previously presented) The method of claim 5, wherein the aqueous basic solution consists essentially of potassium hydroxide (KOH) and water.

7. - 8. (cancelled)

9. (currently amended) The method of claim 1, wherein the wet cleaning process ~~comprises using deionized water wherein the wafer process surface is subjected to at least one~~ is selected from the group consisting of dipping the wafer process surface into the deionized water and spraying the deionized water onto the wafer process surface while simultaneously agitating the wafer process surface.

10. (previously presented) The method of claim 1, wherein the CMP process further includes applying a polishing solution to the wafer process surface for forming an oxide layer in-situ over the tungsten.

11. (previously presented) The method of claim 10, wherein the polishing solution comprises hydrogen peroxide.

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12. (original) The method of claim 1, further including a wafer process surface cleaning step following the step of chemically mechanically polishing.

13. (currently amended) A method for pre-etching a semiconductor wafer comprising tungsten oxide prior to a chemical mechanical polishing (CMP) process to achieve a uniform tungsten polishing rate comprising the steps of:

providing a wafer process surface having a layer of tungsten oxide overlying tungsten to be chemically mechanically polished;

removing the layer of tungsten oxide according to an etching process selected from the group consisting of dry etching comprising a fluorocarbon etching chemistry and wet etching comprising an aqueous basic solution while simultaneously agitating the process surface with an agitation method selected from the group consisting of megasonic energy and brushing;

cleaning the semiconductor wafer to include the wafer process surface according to a wet cleaning process comprising agitating the process wafer surface with an agitation method selected from the group consisting of megasonic energy and brushing; and,

chemically mechanically polishing the wafer process surface according to a CMP process comprising applying at least an abrasive slurry to the wafer process surface.

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14. (cancelled)

15. (currently amended) The method of claim 13, wherein ~~the wet etching process~~ brushing further comprises applying the aqueous basic solution by a method ~~is~~ selected from the group consisting of dipping the wafer process surface into the aqueous basic solution and spraying the aqueous basic solution onto the wafer process surface.

16. (cancelled)

17. (previously presented) The method of claim 13, wherein the aqueous basic solution has a pH of greater than about 10.

18. (previously presented) The method of claim 17, wherein the aqueous basic solution consists essentially of potassium hydroxide (KOH) and water.

19. (previously presented) The method of claim 13, wherein the dry etching process comprises a reactive ion etch process comprising CF_4 and oxygen.

20. (cancelled)

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21. (previously presented) The method of claim 1, wherein the dry etching process comprises a reactive ion etch process comprising CF_4 and oxygen.